

DISCOVERY OF *SUBULARIA AQUATICA* L. IN  
COLORADO AND THE EXTENSION OF ITS RANGE

JODY K. NELSON AND WILLIAM E. HARMON

ABSTRACT

A new record for the vascular flora of Colorado is reported. *Subularia aquatica* L. was found growing on a muddy, subalpine lake bottom in north-central Colorado during the field season of 1992. This extends its previously known range in the Southern Rocky Mountains by approximately 220 miles (354 km) to the east from the Utah localities and 270-280 miles (435-450 km) southeastward from its Wyoming localities.

Key Words: *Subularia aquatica* L., Colorado, vascular flora, range extension

Field work during the summer of 1992 has added a new record to the vascular flora of Colorado. Treatments by Coulter (1885), Rydberg (1917), Fernald (1950), Gleason (1952), Harrington (1954), Gleason and Cronquist (1963), Mulligan and Calder (1964), Dorn (1988), Weber (1976, 1987, 1990), and Weber and Wittman (1992), do not indicate that *Subularia aquatica* L. occurs in Colorado.

*Subularia aquatica* L. is a dwarf, aquatic or littoral mustard, in which the flowers are either self-pollinating or when submerged are cleistogamous. Subula from the Latin refers to the awl-shaped leaves which lend to the common name of awlwort. Often found in clear, cold water lakes at higher elevations (Mulligan and Calder, 1964), the plants grow on muddy bottoms of lake margins (Gleason, 1952).

The discovery of *S. aquatica* in Colorado was made in the Neota Wilderness Area, Larimer County, (R75W, T7N, Sec. 33), in a small unnamed lake at an elevation of 10,354 ft. Mulligan and Calder (1964) report that *S. aquatica* is often found growing in conjunction with other plants which have similar awl or grass-like leaves. They give *Eleocharis acicularis* (L.) R. & S. and similar species of *Limosella* as examples. The Colorado specimens were found growing abundantly on the muddy lake bottom in association with *Isoetes bolanderi* Engelman another abundant species there.

The discovery of *S. aquatica* L. in Colorado significantly expands its previously known range in the Southern Rocky Mountains. Widely distributed across the northern hemisphere from

Greenland, Iceland, northern Europe to the Urals, then disjunct to Kamchatka, and then extending from Alaska to Newfoundland, its furthest distribution southward in North America is into California, Utah, and Wyoming (Mulligan and Calder, 1964).

The closest collections to the Colorado location are from Mirror Lake, Duchesne Co., Utah and New Fork Lakes, Sublette Co., Dinwoody Creek, Fremont Co., and Yellowstone Lake, Yellowstone National Park, all in Wyoming (Mulligan and Calder, 1964). This discovery of *S. aquatica* L. in Colorado extends its range eastward from Utah by approximately 220 miles (354 km) and its range southeastward from the Wyoming localities by approximately 270–280 miles (435–450 km).

Voucher specimens are being deposited at the University of Northern Colorado Herbarium at Greeley (GREE), the University of Colorado Herbarium at Boulder (COLO), and the Rocky Mountain Herbarium at Laramie (RM).

Special thanks are given to Dan Bach and John Moore for their assistance.

#### LITERATURE CITED

- COULTER, J. M. 1888. Manual of Botany of the Rocky Mountain Region. Ivison, Blakeman, Taylor, and Co., New York, N.Y. 452 pp.
- DORN, R. D. 1988. Vascular Plants of Wyoming. Mountain West Publ., Cheyenne, Wy. 340 pp.
- FERNALD, M. L. 1950. Gray's Manual of Botany, 8th ed. American Book Co., New York, N.Y. 1632 pp.
- GLEASON, H. A. 1952. The new Britton and Brown Illustrated Flora of the Northeastern United States and Adjacent Canada. Lancaster Press, Lancaster, Pa. 655 pp.
- AND A. CRONQUIST. 1963. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. D. Van Nostrand Co., Inc., New York, N.Y. 810 pp.
- HARRINGTON, H. D. 1954. Manual of the Plants of Colorado. Sage Books, Denver: 666 pp.
- MULLIGAN, G. A. AND J. A. CALDER. 1964. The genus *Subularia* (Cruciferae). *Rhodora* 66: 127–135.
- RYDBERG, P. A. 1917. Flora of the Rocky Mountains and Adjacent Plains. Steinman and Foltz, Lancaster, Pa. 1110 pp.
- WEBER, W. A. 1976. Rocky mountain flora. Colorado Associated University Press. Boulder, Co. 479 pp.
- . 1990. Colorado Flora: Western Slope. Colorado Associated University Press, Boulder, Co. 530 pp.
- . 1990. Colorado Flora: Eastern Slope. University Press of Colorado, Niwot, Co. 396 pp.

——— AND R. C. WITTMANN. 1992. Catalog of the Colorado Flora: a Biodiversity Baseline. University Press of Colorado, Niwot, Co. 215 pp.

DEPARTMENT OF BIOLOGICAL SCIENCES  
ROSS 228  
UNIVERSITY OF NORTHERN COLORADO  
GREELEY, CO 80639